REMARKS

The Examiner is thanked for the thorough examination of the present application. The Office Action, however, continued to reject all examined claims 1-30. In response, Applicant submits the foregoing amendments and the following remarks. Specifically, claims 1, 11, and 21 have been amended. Claims 6-10, 16-20 and 26-30 are cancelled.

Objections

The Office Action objected to claim 11 because of an informality. In response, the term 'IC' in claim 11 has been amended to 'integrated circuit' to overcome the objection. Accordingly, the objection should be withdrawn.

Rejections under 35 U.S.C 112

The Office Action rejected claims 1-30 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Independent claims 1, 11, and 21 have been amended to address and overcome these rejections. Claims 6, 16, and 26 have been cancelled. As amended, Applicant submits that the written description rejection has been addressed and overcome.

The Office Action also rejected all claims 1-30 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. Applicant respectfully requests reconsideration and withdrawal of the rejection.

In the section entitled 'description of the related art' of the present specification, it is disclosed that "customers frequently overestimate demand in order to meet capacity,

and the foundry consequently frequently over-commits in order to reduce order and capacity loss." It is understood that, the risk of order is well known in the art of the present application. In the application, the main feature is not the risk of order, but is to manage the capacity (dispatch portions of demand) of a fabrication utilizing the risk information. In the application, the database recording risk information is provided in advance. In the section of 'detailed description' of the invention of the specification, it is clear disclosed that 'the risk information includes low risk demand (LRD) and high risk demand (HRD) rates indicating the risk of a demand. The LRD represents a part of the demand with low risk and the HRD represents a part of the demand with high risk, that is, the HRD may be overestimated. In addition, The LRD and HRD have an order rate respectively, and the order rate is the possibility of these becoming actual orders' and 'the risk information can be collected and summarized by analyzing historical information for the demand plans and the purchase orders of each customer'.

Persons in the art will realize the meaning of the risk of order, and how to determine the risk information based on the demand plans and the purchase orders of each customer. Again, in the present application, the main feature is not the risk of order, but rather to manage the capacity of a fabrication utilizing the risk information.

For at least the foregoing reasons, Applicant submits that the rejection under 35 U.S.C. § 112, first paragraph, written description.

Claims 6-10, 16-20, and 26-30 were rejected under 35 U.S.C. § 112, second paragraph. These rejections have been rendered moot by the cancellation of those claims.

Rejections under 35 U.S.C 101

Claims 1-30 are rejected under 35 U.S.C. 101. Applicant respectfully requests reconsideration and withdrawal of the rejection.

MPEP § 2106 states:

> **Statutory Process Claims**
>
> A claim that requires one or more acts to be performed defines a process. However, not all processes are statutory under 35 U.S.C. 101. *Schrader,* 22 F.3d at 296, 30USOQ2d at 1460. To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan (discussed in i below), or (B) be limited to a practical application within the technological arts (discussed in ii below). See *Diamond v. Diehr,* 450 U.S. at 183-84, 209 USPQ at 6 (quoting *Cochrane v. Deener,* 94 U.S. 780, 787-88 (1877)) ("A [statutory] process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.... The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."). See also *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *id.* at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). If a physical transformation occurs outside the computer, a disclosure that permits a skilled artisan to practice the claimed invention, i.e., to put it to a practical use, is sufficient. On the other hand, it is necessary for the claimed invention taken as a whole to produce a practical application if there is only a transformation of signals or data inside a computer or if a process merely manipulates concepts or converts one set of numbers into another.
>
> **Computer-Related Processes Limited to a Practical Application in the Technological Arts**
>
> A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is non-statutory despite the fact that it might inherently have some usefulness. In *Sarkar*, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:

> No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a "process" under 101. Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.
>
> For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *Alappat* 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See *AT&T*, 172 F.3d at 1358, 50 USPQ2d at 1452.

In the present application, the claims are clearly limited to a practical application in the technological arts. In this regard, the claimed embodiments are limited to dispatch received demands and manage fabrication capacity. As described in the specification, customers frequently overestimate demand in order to meet capacity, and the foundry consequently frequently over-commits in order to reduce order and capacity loss. Since the foundry must prepare capacity and related materials for customer demands in advance, this discrepancy between customer and foundry goals and methods has become a major problem in supply chain management, resulting in impacted cost management. The claimed embodiments define a system that can stabilize the loading of each fabrication, such that the manufacturer can manage and prepare appropriate capacity to meet customer demands, and improve cost management in supply chain

management. Consequently, the claims are limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result, and to be a statutory subject matter. For at least this reason, the rejections under U.S.C. 101 should be withdrawn.

Rejections under 35 U.S.C 103(a)

Claims 1-30 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Hood et al. ("Capacity planning under demand uncertainty for semiconductor manufacturing," May 2003, herein Hood) in view of Mine et al. (US Pat. 5,943,484 herein Milne) and further in view of Connors et al. (Methods for job configuration in semiconductor manufacturing", 1996, herein Connors). Applicant respectfully requests reconsideration and withdrawal of these rejections.

In regard to independent claim 1, claim 1 recites

> 1. A demand dispatching method for use in a manufacturer comprising a first fabrication having a capacity, comprising the steps of:
> receiving a first demand;
> ***providing a risk database recording risk information for a first demand, wherein the risk information comprises a first percentage of a low risk part and a second percentage of a high risk part of the first demand, a first order rate for the row risk part, and a second order rate for the high risk part, wherein the first order rate and the second order rate are the possibility of the low risk part and the high risk part to become actual order, respectively***;
> ***dividing the first demand into a low risk demand and a high risk demand according to the first percentage of the low risk part and the second percentage of the high risk part;***
> determining an expected quantity of the first fabrication; and
> ***managing the capacity of the first fabrication by dispatching portions of the low risk demand and the high risk demand to the first fabrication according to the***

expected quantity, and the first order rate and the second order rate, wherein a first quantity of the low risk demand and a second quantity of the high risk demand are dispatched to the first fabrication, and the amount of the first quantity multiplied by the first order rate and the second quantity multiplied by the second order rate is equal to or greater than the expected quantity.

(*Emphasis added*). Claim 1 patently defines over the cited art for at least the reasons that the cited art fails to disclose the features emphasized above.

More specifically, claim 1 define the following distinguishing reatures:

"providing a risk database recording ***risk information*** *for a first demand, wherein the* ***risk information comprises a first percentage of a low risk part and a second percentage of a high risk part of the first demand, a first order rate for the row risk part, and a second order rate for the high risk part****, wherein the first order rate and the second order rate are the possibility of the low risk part and the high risk part to become actual order, respectively*;
dividing the first demand into ***a low risk demand and a high risk demand according to the first percentage of the low risk part and the second percentage of the high risk part***;
determining an expected quantity of the first fabrication; and
managing the capacity of the first fabrication by ***dispatching portions of the low risk demand and the high risk demand to the first fabrication according to the expected quantity, and the first order rate and the second order rate***, wherein *a first quantity of the low risk demand and a second quantity of the high risk demand are dispatched to the first fabrication, and the amount of the first quantity multiplied by the first order rate and the second quantity multiplied by the second order rate is equal to or greater than the expected quantity*".

The Applicant believes that the rejection reflects a misunderstanding of the claimed invention. In this regard, the Office Action asserts that the present invention is a method for dividing forecasted semiconductor product demand into two portions, assigning each portion a probability, and *calculating an expected quantity of demand based on the quantity of the first and second portions multiplied, respectively, with the*

probabilities of the first and second portions. It is noted, in the application, the *expected quantity of demand is* ***not*** *calculated based on the quantity of the first and second portions multiplied, respectively, with the probabilities of the first and second portions.* In the application, the expected quantity of the first fabrication is the quantity of products expected to be produced by the first fabrication.

In the present application, however, ***portions of the low risk demand and the high risk demand are dispatched to the first fabrication according to the expected quantity, and the first order rate and the second order rate.*** In the application, a specific demand is divided into a low risk demand and a high risk demand according to the risk information of the specific demand. Portions of the low risk demand and the high risk demand are dispatched to a fabrication according to order rates corresponding to the low and high risk demands.

The Office Action asserted that Hood teaches dividing forecasted demand into multiple demand scenarios representing a quantity of forecast demand, assigning each demand scenario a probability. It is understood that, in section VI. MODEL EXECUTION of the Hood reference, *Hood discloses 4 scenarios and each represents* ***a combination of different types of products****. For example, scenario S3 represents a moderate ramp of product P08 and extended plateau of mature product P09.* Additionally, ***the probability means the occurrence probability of the scenario***. In the application, as described, a specific demand is divided into a low risk demand and a high risk demand according to the risk information of the specific demand. *The low risk demand and high risk demand respectively have a first order rate and a second order rate. In the application, the demand is classified as* ***low risk and high risk demands,***

and the first order rate and the second order rate are ***the possibility of the low risk demand and the high risk demand to become actual order, respectively.*** Consequently, the two applications are fundamentally different.

In addition, the Examiner asserted that Hood discloses the calculation of the expected quantity of the first fabrication. As described, in the present application, the expected quantity of the first fabrication is the quantity of products expected to be produced by the first fabrication, and is not calculated based on the quantity of the first and second portions multiplied, respectively, with the probabilities of the first and second portions. They are different.

The Examiner further asserts that Milne discloses the dispatched demand is first divided into two or more portions, and allocated according to yield expectations. It is understood that, in the Milne reference, ***the parts are classified based on the critical level of components recorded in the bills of material***. Similarly, in the application, a specific demand is divided into a low risk demand and a high risk demand ***according to the risk information of the specific demand***. The division manners of the two applications are totally different. Additionally, in the Milne reference, different parts are handled using different methods (MRP or LPMRP methods). In the application, both portions of the divided demands may be also dispatched to the same fabrication, and processed with the same manufacturing process.

The Office Action further asserts that Connors teaches determining the volume of jobs to be released into production and that demand allocation is adversely (risk) affected by yield loss in fabrication. It is clearly that, in the Connors reference, the job allocation is considered the ***yield loss in fabrication,*** the ***"risk"*** asserted by the Office

Action. It is understood that the risk in the Connors reference is very different from that in the application. In the application, ***the risk means the possibility of whether the demand to become actual order***. It is fundamentally different.

In short, nowhere in the Hood, Mine, or Connors does it teach or suggest the claimed features. Thus, even if the references could be properly combined, the resulting combination still fails to render the claimed combinations obvious. For at least these reasons, independent claims 1, 11, and 21 patently define over the cited art. Insofar as all remaining claims depend from claims 1, 11, or 21, the rejections of call claims should be withdrawn for at least the same reasons. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

CONCLUSION

For at least the foregoing reasons, all claims are in condition for allwance. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone the undersigned.

No fee is believed to be due in connection with this submission. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

/Daniel R. McClure/

Daniel R. McClure
Registration No. 38,962

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, L.L.P.
Suite 1500
600 Galleria Parkway S.E.
Atlanta, Georgia 30339
(770) 933-9500